

AMENDMENTS TO THE DRAWINGS

Attached to this Amendment, please find the REPLACEMENT SHEETS AND NEW SHEET OF DRAWINGS with the following additions and changes:

REPL/NEW SHEET NUMBER:	PREVIOUSLY INCLUDED FIGURES:	INCLUDED FIGURES. ADDITIONS AND CHANGES TO FIGURES.
1	FIGS. 1, 3	FIGS. 1, 3. In FIG. 1, ref. number 21, 34, 35, 200 are added. In FIG. 3, ref. numbers 200, 202 are added. Ref. no. 202 indicates the sealing position.
2	FIGS. 4, 5, 6, 7	FIGS. 4, 5, 6, 7. In FIG. 4, "SEE FIG. 5" and "SEE FIG. 6" are added.
3	FIGS. 8, 9, 10	FIGS. 8, 10. FIG. 9 is cancelled from sheet number 3. (new FIGS. 9a, 9b are added to sheet number 8.)
4	FIGS. 11, 12, 13a, 13b	FIGS. 11, 12, 13a, 13b. No additions or changes.
5	FIGS. 15, 16	FIGS. 15, 16. No additions or changes.
6	FIG. 14	FIG. 14. No additions or changes.
7	FIG. 2, 2a, 2b, 2c	FIGS. 2, 2a, 2b, 2c. No additions or changes.
8 (new)	-	New FIGS. 9a, 9b. New FIGS. 9a is a copy of removed FIG. 9, except that FIG. 9a shows the sealing position in which seal 5 is pressed against window panel 1. FIG. 9b is a copy of FIG. 9, except that FIG. 9b shows the sliding position in which seal 5 is not pressed against window panel 1.
9 (new)	-	New FIG. 3a. New FIG. 3a is a copy of FIG. 3 except that FIG. 3a shows the sliding position 204.

REMARKS

This Amendment is in response to the Office Action of November 24, 2008. In the Office Action, the Examiner's remarks correctly indicate that Claims 1-33, 35 and 36 are pending and rejected. Applicant notes that the Office Action Summary Form PTOL-326 erroneously indicates that Claims 1-3, 35 and 36 are pending and rejected. With this Amendment, Claims 1-6, 8-10, 12, 14, 16, 17, 19-23, 33, 35 are amended, and Claims 1-33, 35 and 36 are presented for reconsideration and allowance.

REQUEST FOR INTERVIEW

Applicant's attorney wishes to thank the Examiner for the interview on December 1, 2008 in which changes to the application were discussed. If, after review of the currently presented changes, the Examiner believes additional changes may be helpful, Applicant's attorney hereby request an interview to discuss any additional changes.

SUBSTITUTE SPECIFICATION, REPLACEMENT & NEW DRAWING SHEETS

With this Amendment, applicant submits a substitute specification (both marked up and clean copies) and replacement and new drawings sheets.

The specification is amended to include data on Applicant's French priority applications which were incorporated by reference in their entireties in Applicant's originally filed transmittal of November 21, 2003. MPEP 201.13 II (G).

No new matter is introduced in the substitute specification and replacement and new drawing sheets.

The specification is amended to add reference numbers to make the specification more readable, including reference numbers for the sliding (open) and the sealing (closed) positions suggested by the Examiner. The substitute and new drawings include additional reference numbers. New FIG. 3a is the same as original FIG. 3 except that FIG. 3a illustrates the sliding (open) position 204. New FIG. 9a-9b are the same as original FIG. 9 except that FIG. 9a illustrates the sealing

(closed) position and FIG. 9b illustrates the sliding (open) position. A more detailed list of drawing changes is included in the AMENDMENTS TO THE DRAWINGS portion of this amendment.

Acceptance of the substitute specification and replacement and new drawing sheets is hereby requested.

OBJECTION TO THE DRAWINGS

The drawings were objected to under 37 CFR 1.83(a) which requires that the drawings show every feature of the invention specified in the claims. With this Amendment, replacement drawing sheets and new drawing sheets are submitted.

The replacement and new drawing sheets include additional reference numbers identifying the sliding (not contacting", open) position 204 (FIG. 3a) and the sealing (closed) position 202 (FIG. 3). Reference numbers are also added in the attached SUBSTITUTE specification.

Figure 9a illustrates a cross sectional view of the cross member, the central strut and the front strut of the upper unit illustrated in originally filed Figure 9, in which the movable panel is in the sealing position. Figure 9a illustrates that in such a sealing position, the movable panel presses the watertight joint (seal) so that that the movable panel is closed in a watertight way (see originally filed specification, page 15, line 28 to page 16, line 3).

Figure 9b illustrates a cross sectional view of the cross member, the central strut and the front strut of the upper unit illustrated in originally filed Figure 9, in which the movable panel is in a sliding position. Figure 9b illustrates that in such a sliding position, the movable panel is moved away from the seal in such a way that it does not press the seal any more; i.e., the seal and the movable panel do not contact each other, and the movable panel can be displaced from the sealing position to the sliding position without damaging the seal (see originally filed specification, page 16, lines 8-15, page 17, lines 17-23).

In the originally filed figure 9, the seal is illustrated as if "passing through" the movable panel. This illustration is not "exact" in a photographic sense, but the illustration is a

conventional way to schematically represent such seals in engineering drawings, particularly in automotive engineering drawings.

Withdrawal of the objections to the drawings, as presently amended, and acceptance of the attached replacement drawing sheets and new drawing sheets is requested.

Claim Rejections – 35 U.S.C. 112

Claims 1-33 and 35-36 were rejected under 35 USC 112, second paragraph, as being indefinite.

With this Amendment, Claim 1 is amended to recite a "watertight seal" instead of a watertight joint. With this Amendment, Claim 1 is amended to recite "the movable glass panel does not have contact with the watertight seal in said sliding position" instead of "the movable glass panel does not lean against the watertight joint in said sliding position". With this amendment, Claim 1 is amended to refer consistently to the "sliding position" instead of an "open position". It is believed that these changes to wording make the claim more readable.

With regard to Claim 1, the Examiner questioned whether the sealing position is the "closed position" of the window glass panel, and whether the panel does not touch any seals when the panel is not closed. The sealing position is the closed position. With this Amendment, Claim 1 is amended to recite "the movable glass panel does not have contact with the watertight seal in the sliding position".

With regard to Claim 1, the Examiner questioned what is meant by a "watertight joint". With this amendment, Claim 1 now refers to a "watertight seal". The watertight seal is classically used in the automotive industry to ensure watertightness of a vehicle window that is closed.

With regard to Claim 1, the Examiner questioned whether the strut has a guide track. With this Amendment, Claim 1 now recites "at least one guide track supported on the at least one strut".

With regard to Claim 1, the Examiner questioned the meaning of "panel does not lean against the watertight joint". With this Amendment, Claim 1 now recites "panel does not have

contact with the watertight seal." This is illustrated in Figure 9b.

With regard to Claim 1, the Examiner questioned the phrase "so that the movable glass panel slides without damaging the watertight joint". With this Amendment, Claim 1 now recites "so that the movable glass panel slides without damaging the watertight seal". When the movable glass panel is moved away from the sealing (closed) position to the sliding (open) position, the movable glass panel is kept away from the seal (see originally filed specification page 16, line 28 to page 17, line 5, and figure 9b). Thus the movable glass panel can slide from one sliding position to another sliding position without rubbing on the seal. Consequently, sliding of the movable panel without rubbing on the seal avoids deterioration of the seal as it is explained page 4, line 23-28 of the originally filed specification.

With regard to Claim 1, the Examiner questioned the phrase "to press against the watertight joint in the sealing position. With this Amendment, Claim 1 is amended to recite "to press against the watertight seal in a sealing position". When the movable glass panel slides upwardly from an sliding (open) position to the sealing (closed) position, it is displaced sideways according to arrow F1 (see figure 2) to the sealing (closed) position in which the movable glass panel presses against the watertight seal to ensure a watertight closure (see originally filed specification page 15, line 28 to page 16 line 3, and figure 9a).

Claim 1 and dependent Claims 2-21, 35, as presently amended, are therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejections of Claim 1-21, 35, and reconsideration and allowance of Claim 1-21, 35, as presently amended, are therefore requested.

Claim 3

With regard to Claim 3, the Examiner questioned what is meant by phrase "the at least one strut bears at least two guide tracks. With this Amendment, Claim 3 is amended to recite the door comprises at least two guide tracks, and the at least two guide tracks are supported on the at least one strut, respectively next to upper and lower parts of the movable glass panel. The phrase means that the at least one strut supports at least two guide tracks. This is disclosed in the originally filed specification at page 5, lines 11-14.

Claim 3, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 3, and reconsideration and allowance of Claim 3, as presently amended, are therefore requested.

Claim 4

With regard to Claim 4, the Examiner questioned the phrase "the at least one strut enters into the body shell. With Amendment, Claim 4 is amended to recite "the at least one strut is mounted within the body shell" as suggested by the Examiner.

Claim 4, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 4, and reconsideration and allowance of Claim 4, as presently amended, are therefore requested.

Claim 5

With regard to Claim 5, the Examiner questioned what is meant by "the sealing position". With this Amendment, Claim 5 is amended to recite "so as to have a flush aspect when the movable glass panel is in the sealing position". The sealing position is the closed position.

Claim 5, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 5, and reconsideration and allowance of Claim 5, as presently amended, are therefore requested.

Claim 7

With regard to Claim 7, the Examiner questioned whether the "guide rail" was different or the same as "guide track". A "guide track" (as recited in Claim 1) is supported on a strut. A "guide rail" (as recited in Claim 7) is not supported on a strut. An exemplary guide rail 22 is illustrated in FIG. 1.

Claim 7, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 7, and reconsideration and allowance of Claim 7, as presently amended, are therefore requested.

Claim 8

With regard to Claim 8, the Examiner questioned whether "at least one of the shoes" should be "the at least one shoe". With this Amendment, Claim 8 is amended as suggested by the

Examiner.

Claim 8, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 8, and reconsideration and allowance of Claim 8, as presently amended, are therefore requested.

Claim 10

With regard to Claim 10, the Examiner questioned whether "a single rail" is the same or different than the guide track of Claim 1. A "guide track" (as recited in Claim 1) is supported on a strut. A "rail" (as recited in Claim 10) is not supported on a strut. An exemplary rail 22 is illustrated in FIG. 1.

The single rail (22), that is mounted inside the body shell, ensures guidance of the movable panel along a vertical direction between the sealing position and an sliding position via motorised driving means (see figure 1, originally filed specification page 6, line 27 - page 7, line 1, page 15, lines 2-6). In opposition, the guide track are located in the struts of the frame and intended to cooperate with the sliding feet supported by the movable panel (see originally filed specification page 15, lines 7-10).

Claim 10 is amended as suggested by the Examiner, and presently recites "onto a single rail".

Claim 10, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 10, and reconsideration and allowance of Claim 10, as presently amended, are therefore requested.

Claim 11

With regard to Claim 11, the Examiner questioned whether the sealing position is the same as the closed position. With this Amendment, independent Claim 1 (from which Claim 11 depends) is amended to remove references to the closed position, and to refer instead consistently to the sealing position. The sealing position is the same as the closed position.

Withdrawal of the rejection of Claim 11, and reconsideration and allowance of Claim 11, as presently amended, are therefore requested.

Claim 12

With regard to Claim 12, the Examiner questioned whether the wiper blade guides the glass panel and moves across the glass panel. The wiper blade does not guide the glass panel, but does move across the glass panel. With this Amendment, Claim 12 is amended to recite a windscreens wiper blade that moves across the movable glass panel when the movable glass panel is in the sealing position. The operation of an exemplary windscreens wiper is disclosed in Figure 14 and in the Original disclosure at page 25, line 7 to page 26, line 9.

The displacement of the movable glass panel is different and independent of the displacement of the wiper blade.

Claim 12, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 12, and reconsideration and allowance of Claim 12, as presently amended, are therefore requested.

Claim 14

With regard to Claim 14, the Examiner questioned whether the claim should recite a rolled position rather than a folded position. With this Amendment, Claim 14 is amended to recite a rolled position as suggested by the Examiner.

Claim 14, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 14, and reconsideration and allowance of Claim 14, as presently amended, are therefore requested.

Claims 15, 16

With regard to Claims 15 and 16, the Examiner questioned what is meant by burglarproof means and how does the lock work, and is the window glass not guided/locked in all positions.

As disclosed in the original specification at page 5, lines 15-21, the movable glass panel has a flush aspect on the side turned toward the outside of a vehicle and makes contact only on the side turned toward the inside of the vehicle. If there were no burglarproof means, it would be possible for a burglar to pry the top of the movable glass panel outward toward the outside of the vehicle, and thereby gain access to the inside of the vehicle.

The burglarproof means are means against break-in. More particularly, these means ensure that when the movable panel is in the sealing (or close) position, it is impossible to pull on the movable panel so as to displace it towards the exterior of the vehicle, nor to lean down on it to displace it towards the interior of the vehicle in order to break open the car (see page 24, lines 8-12).

According to the disclosure, a lock is a fastener hook or a bolt that is likely to cooperate with a housing or a complementary-shaped strike as it is explained in the original specification at page 7, line 28 to page 8, line 6 and figures 11, 12.

As illustrated in figures 11 and 12, When the movable glass panel 1 is in the sealing (closed) position, the lock (fastener hook or bolt) 12 supported by the movable glass panel 1 cooperates with a complementary-shaped part housing part 362 formed or supported by the cross member 36 of the frame (see figure 12) or struts in such a way that it is impossible to move the movable panel away from the frame towards the inside nor the outside of the vehicle and enter it.

It is noted that the movable panel is only locked when in the sealing position as it is explained page 8, line 4 of the originally filed specification.

Claim 16 is amended such that “one of the struts” is replaced by the wording “the struts”.

Claims 15 and 16, as presently amended, are therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claims 15 and 16, and reconsideration and allowance of Claims 15 and 16, as presently amended, are therefore requested.

Claim 17

With regard to Claim 17, the Examiner questioned whether there is more than one strut and how the lock can be arranged to slot into a part. With this Amendment, Claim 17 is amended to recite a strut rather than struts. Figure 12 illustrates a cross section view of a lock 12 slotting into a part 362. As the movable glass panel 1 moves upwardly in Figure 12, the lock 12 moves upwardly to slot into a slot in part 362.

Claim 17, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 17, and reconsideration and allowance of Claim 17, as presently amended, are therefore requested.

Claim 19

With regard to Claim 19, the Examiner suggested changing operate to cooperate. The suggested change is made to Claim 19.

Claim 19, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 19, and reconsideration and allowance of Claim 19, as presently amended, are therefore requested.

Claim 20

With regard to Claim 20, the Examiner questioned how a screw can act on a sealing position. As illustrated in Figure 12, a screw 121 acts through engagement with a lock 12 on the movable panel1 in such a way that the definitive position that it can take when it is in the sealing position can be adjusted. As disclosed in the originally filed specification at page 24, lines 14-23, one screw can be provided for adjustment in an upward direction, and another screw can be provided for adjustment in a lateral direction. The Applicant submits an amended claim 20 in which this limitation is included.

Claim 20, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 20, and reconsideration and allowance of Claim 20, as presently amended, are therefore requested.

Claim 21

With regard to Claim 21, the Examiner questions how a strut can be an extrusion. With this amendment, Claim 21 is amended to recite that the strut is made by extrusion.

Claim 21, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 21, and reconsideration and allowance of Claim 21, as presently amended, are therefore requested.

Claim 22

With regard to Claim 22, the Examiner questioned the phrase "sealing position and at least one open position." With this amendment, the phrase is amended to read "sealing position and at least one sliding position". The Examiner questioned whether a unit or a kit was claimed. With this Amendment, the preamble of Claim 22 is amended to recite "the unit". The sliding glass panel does not touch any seals when the sliding glass panel is in a sliding (open) position.

Claim 22, as presently amended, is therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 22, and reconsideration and allowance of Claim 22, as presently amended, are therefore requested.

Claims 22-33 and 35-36

With regard to Claims 22-33 and 35-36, the Examiner questioned the phrase "watertight joint". With this Amendment, the phrase "watertight joint" is cancelled and the phrase "watertight seal" is recited in all claims.

Claims 22-33 and 35-36, as presently amended, are therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claims 22-33 and 35-36, and reconsideration and allowance of Claims 22-33 and 35-36, as presently amended, are therefore requested.

Claim 22

With regard to Claim 22, the Examiner questioned the phrase "the at least one strut bears at least one guide track". With this Amendment, Claim 22 is amended to recite "the at least one strut supports at least one guide track. The Examiner questioned the phrase "panel does not lean against the watertight joint". With this Amendment, Claim 22 is amended to recite "panel does not have contact with the watertight seal ". The Examiner questioned the phrase "so that the movable glass panel slides without damaging the watertight joint". With this Amendment, Claim 22 is amended to recite "so that the movable glass panel slides without damaging the watertight seal". The Examiner questioned the phrase "to press against the watertight joint in the sealing plane". With this Amendment, Claim 22 is amended to recite "to press against the watertight seal in the sealing position". The sealing position is a closed position for the movable glass panel. The watertight seal is shown for example at 5 in Figures 1, 8, 9a, 9b, 10.

Claim 22, as presently amended, are therefore believed to meet the requirements of 35 USC 112, second paragraph. Withdrawal of the rejection of Claim 22, and reconsideration and allowance of Claim 22, as presently amended, are therefore requested.

Claim 33

With regard to Claim 33, the Examiner questioned the meaning of the phrase "movable glass panel arranged to slide at least partially on an inside of the body shell between a sealing position and an open position. The sealing position is the closed position of the movable glass panel. The panel does not touch the seals when the panel is not closed. Claim 33 is presently amended to recite a sliding position rather than an open position. The Examiner questioned the phrase "the door comprises at least one strut bearing a watertight joint". With this amendment, Claim 33 is amended to recite a watertight seal rather than a watertight joint. The Examiner questioned the phrase "the at least one strut bears at least one guide track". Claim 33 is presently amended to recite "the at least one strut supports at least one guide track". The Examiner questioned the phrase "panel does not lean against the watertight joint". With this Amendment, Claim 33 is amended to recite "panel does not have contact with the watertight seal". The Examiner questioned the phrase "to press against the watertight joint in the sealing position". With this Amendment, Claim 33 is amended to recite "to press against the watertight seal in the sealing position". The sealing position is the closed position.

Claim 35

With regard to Claim 35, the Examiner questions how the means for driving is mounted "into" a single rail. With this Amendment, Claim 35 is amended to recite "onto" a single rail. In Claim 35 the Examiner questioned references to "strut" and "struts". With this Amendment, Claim 35 is amended to recite "the at least one strut".

Concluding Remarks

The application discloses a motor vehicle door with a movable panel moving along a primarily vertical direction. More precisely, the application discloses equipping the door with struts bearing tracks that cause the movable panel to move away slightly from the watertight

seal during opening. The tracks cause the movable panel to move slightly towards the outside of the vehicle during opening. The Claims 1-33, 35 and 36, as presently amended, meet the requirements of 35 USC 112, second paragraph.

The application appears to be in condition for allowance and favorable action is requested. The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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Enclosures:

Substitute Specification (marked up)
Substitute Specification (clean copy)
Sheets 1-9 of substitute and new drawing sheets

**DOOR OF A MOTOR VEHICLE WITH A SLIDING
GLASS PANEL, AND UPPER KIT FOR DOOR,
CORRESPONDING METHOD OF MANUFACTURING
AND VEHICLE**

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FOREIGN PRIORITY DATA

The present application claims foreign priority from French Applications FR 02-14611 filed November 21, 2002, FR 02-14612 filed November 21, 2002, FR 02-15107 filed November 29, 2002, and FR 03-04795 filed 10 April 16, 2003, the contents of which are incorporated by reference in their entireties.

FIELD OF THE INVENTION

The field of the invention is that of the making of openings in vehicle doors. More precisely, the 15 invention relates to the sealing devices of an opening made in the door of a motor vehicle and comprising a movable part according to an essentially vertical direction, likely to close or free an opening.

20

BACKGROUND OF THE INVENTION

The invention particularly applies to side doors of a motor vehicle, and can also apply to back doors or to rear hatches.

25

Classically, to seal the opening of a vehicle, whether that be a car, a commercial vehicle, a lorry, a bus or a train carriage, a window is fitted, held in place by a frame. The latter has an internal part and an external part, which simultaneously press against the edges of the window, with sealing 30 trimmings.

The most commonly known technique for opening and closing windows is to render the latter vertically movable within its own plane, in making it enter or exit its shell or its side door trimmings.

5 Today, this technique is much used and automation solutions are known. The fitting of cars with electric windows is now commonplace.

At the same time, another technique was proposed by the Assignee of the present application. This
10 technique is notably described in the documents of patents EP-0 778 168 and EP-0 857 844.

Thanks to this technique, "flush openings" are achieved which have, aesthetically speaking, as seen from the outside, a smooth aspect, being flush as no
15 frame is needed.

According to the prior technique proposed by the Assignee, the "flush openings" comprise a fixed unit and a movable part, the fixed unit being intended to be fitted into the especially designed well on the
20 body of the vehicle.

Now, the openings made in the doors have relatively restricted dimensions so it is not
opportune appropriate to greatly reduce them in introducing a fixed unit according to the prior
25 technique.

Nevertheless, it is desirable to be able to fit certain vehicles, in particular top-of-the-range vehicles such as people carriers, with flush openings, the prior flush openings not being
30 modifiable to doors of such vehicles.

The present invention proposes a solution that allows the closing of an opening made in the door of a vehicle with a flush panel fitted with a vertically movable part for ventilation purposes.

5 The invention also has the objective of supplying such a sealing device which allows to resolve the particular problems associated with the structure of a door.

Furthermore, another objective of the invention
10 is to supply such a sealing device to ensure the watertightness in a reliable and durable manner.

The invention also has the objective of supplying such a sealing device which avoids the introduction of harmful and undesirable particles
15 between the movable panel and the means of associated watertightness.

The invention also has the objective of supplying such a sealing device which allows the making of doors which have new characteristics,
20 notably in terms of aesthetics and ergonomics.

Another objective of the invention is to supply such a sealing device which is of simple design and easy to implement.

The invention has yet another objective,
25 according to certain embodiments, of supplying such a door which allows simple integration and aesthetics of a concealing device, securing of the sealing device against possible attempted intrusions, etc.

Yet another objective of the invention is to supply a method of manufacturing the door of a motor vehicle, that is simple and quick to implement.

SUMMARY OF THE INVENTION

5 These objectives along with others, which will be described later, are achieved thanks to the invention whose object is the door of a motor vehicle, comprising a body shell and at least one movable glass panel, likely to slide at least
10 partially on the inside of the said shell between a sealing position and at least one open position, the door comprising at least one strut bearing a watertight joint seal against which the side of the said movable glass panel, turned towards the inside
15 of the vehicle leans comes to have contact with the watertight seal, in the said sealing position, each of the said struts bearing at least one guide track allowing to slightly distance the said movable glass panel from the said watertight joint seal, in a
20 sliding position in which the said movable panel can slide without damaging the said watertight joint seal, and to return the said movable glass panel and the said watertight joint seal to lean—against have contact with each other, in the said sealing
25 position.

The watertightness of the device is ensured when the movable panel is in the sealing position, whilst avoiding, or at least limiting, the harmful or undesirable effects due to the interaction between
30 the movable panel and watertight joint seal.

Indeed, by distancing the movable panel from the joint while the panel slides vertically, the invention avoids:

5 premature wear and tear of the watertight joint
seal likely to be provoked produced by the successive rubbing of the panel against the joint,

noise (such as squeaking), once again due to the rubbing of the panel against the joint, such noises can increase with the structural adjustments to the 10 joint due to variations in temperature, humidity or due to sun rays, wear and tear, etc.

The use of tracks allows this function to be ensured in a simple and efficient manner.

According to an advantageous solution, in the 15 said sliding position, the said glass panel is in a sliding plane parallel to a sealing plane occupied by the said glass panel in the sealing position.

According to a preferred solution, each of the said struts bears at least two guide tracks, 20 respectively next to the upper and lower parts of the said strut.

According to an advantageous solution, at least one of the said struts enters into the said shell.

Preferably, the said strut(s) are designed so as 25 only to come into contact with the side of the said movable glass panel turned towards the inside of the vehicle, so as to have a flush aspect in the said sealing position.

Thus a door is obtained comprising a window 30 sliding in a vertical direction and that has a flush

aspect as well as an aerodynamic aspect, compatible with the other "flush openings" proposed by the present Assignee.

Advantageously, the said struts are connected at 5 their upper parts by a cross member, to create an interior frame, the said watertight joint seal substantially extending along the entire length of the said frame.

Thus, the invention supplies a sealing device 10 according to which it has not been planned to fit a fixed unit defining a sliding plane for the movable panel as is the case with the prior technique.

On the contrary, the device exploits the strut(s) or the frame, classically present on a door, 15 as a means of support for the panel when the latter is in the sealing position. In other words, in the sealing position, the movable panel positions itself in front by leaning against the strut(s) or the frame, the joint ensuring the watertightness of the 20 thus created sealing device.

Furthermore, the invention allows the suppression of the frame moldings classically added to the side doors.

According to an advantageous solution, the said 25 movable panel is mounted to at least one foot whose displacement is guided via a guide rail and the said guide track(s).

Advantageously, the door comprises a motorized 30 means of driving the said movable panel, ensuring the said sliding.

According to another embodiment, the means of driving can be manual.

According to a first variant, the said means of driving are mounted into a single rail fitted to the
5 inside of the said shell, and/or into at least one of the said struts.

In this case and according to a first approach, the said means of driving advantageously act on at least one of the said feet.

10 According to another characteristic, the door further comprises at least one fixed panel, fitted into the said sealing plane.

According to a particular embodiment, the door comprises at least a windscreen wiper blade intended
15 to be moved across the said panel in the sealing position, means of guiding being planned for on the said strut(s) so as to allow for linear movement of the said blades.

According to another advantageous aspect of the
20 invention, the door can support a blind.

In this manner, the fitting ranges are considerably simplified, and the adjustments necessary for the correct operating of the blind are, at least to a large extent, avoided in comparison
25 with classical blinds fitted to a trimming, itself fitted to the structure of the door.

According to a preferred solution, at least one of the said struts has means of guiding the sliding of the pull bar of the said blind.

According to another characteristic, the door comprises burglarproof means acting upon the said movable panel in the sealing position.

In this case, the said burglarproof means 5 preferably comprise at least a lock intended to operate with a complementarily shaped housing set into one of the said struts or into the said frame, with the aim of providing a burglarproof position of the said panel in the sealing position, according to 10 which the panel can not be pulled towards the exterior of the vehicle.

According to an advantageous solution, the said lock(s) are designed to slot into a part that protrudes the said struts or the said frame.

15 According to yet another characteristic, the door comprises means of adjusting the said sealing position of the said movable panel and/or of the said burglarproof means.

Thus, the position of the movable panel can be 20 quickly and easily adjusted in relation to its surroundings (frame, body, rear quarter light, etc.).

In this case, the said means of adjusting are advantageously supported by the said movable panel or by an integral part of the latter, and are intended 25 to operate with the said frame so as to adjust the said sealing position of the said movable panel.

According to a preferred solution, the said means of adjusting comprise two screws, acting on the said sealing position along the width of the said

movable panel, the other acting on the said sealing position along the height of the said movable panel.

According to an advantageous solution, the said strut(s) and/or the said cross member are made via
5 extrusion.

Thus, the struts can be designed and made so that they integrate all the operating parts allowing the implementation of the aforementioned characteristics.

10 The invention also relates to an upper unit of the door of a motor vehicle, creating a kit ready to be mounted to a lower shell of the door of a motor vehicle, and comprising at least one movable glass panel, likely to slide at least partially on the
15 inside of the said shell between a sealing position and at least one open position, the door comprises at least one strut bearing a watertight joint seal against which the side of the said movable glass panel turned towards the inside of the vehicle leans,
20 in the said sealing position, each of the said struts bearing at least one guide track allowing to slightly distance the said movable glass panel from the said watertight joint seal, in a sliding position in which the said movable panel can slide without damaging the
25 said watertight joint seal, and to return the said movable glass panel and the said watertight joint seal to lean against each other, in the said sealing position.

According to an advantageous solution, this
30 upper unit comprises means of stiffening.

In this case, the means of stiffening preferably comprise at least one lower cross member linking the lower part to the said struts.

Advantageously, the said lower cross member has
5 means of implementation and/or support of the said struts.

Preferably, the said means of implementation and/or support comprise at least one coupling fitted onto one of the ends of the said lower cross member
10 and intended to create a housing for one of the said struts.

Advantageously, the said guide rails have at least one mounting bracket on the strut and/or the cross member.

15 The assembling of the upper unit which has just been described can be obtained in a particularly simple and efficient manner: the struts are fixed to the cross member, then the guide rails are fixed to the struts. As this will be seen later, there remains
20 the interlocking of the movable glass panel with the driving feet, for example via simple clips. Such an assembly on a production line is largely simplified compared to classical assembly of traditional doors.

Such a layout is also particularly advantageous
25 during future maintenance work, the disassembling of the unit can be obtained by carrying out a limited number of simple actions in the reverse order of assembly.

According to another characteristic, this upper
30 unit comprises means of motorization.

In this case, the means of motorization are preferably fitted to the cross member, and advantageously comprise:

at least one gear motor;

5 at least one coil coupled to the said gear motor;

at least one multi-stranded cable;

at least one protective sheath of the said cable(s);

10 means of placing under tension the said cable(s).

Of course, other embodiments are conceivable whilst remaining in the scope of the invention, notably in planning for means of motorization 15 implementing rack type cables.

The assembling (or pre-assembling) of the means of motorization with the cross member allow to conceive the manufacturing and assembly (on the cross member) of the means of motorization in a manner 20 independent of the door, even independent of the entire upper unit. The making of this part comprising the means of motorization can consequently be subcontracted and delivered in a ready-to-be-assembled state.

25 Preferably, the upper unit also comprises means of motorization.

According to a preferred solution, at least one 30 of the said struts has an extension intended to enter into the said shell so as to allow the interlocking of the said shell with the said unit.

Advantageously, the upper unit has a blind.

Thus, a complete upper unit is delivered, pre-equipment and set (integrating the opening, the means of motorization, a blind, means of watertightness, 5 etc.), which considerably reduces the problems notably connected with the logistic and/or separate delivery of all the units in question.

The invention also relates to a motor vehicle fitted with an aforementioned door.

10 The invention yet again relates to a method of manufacturing the door of a motor vehicle, characterized in that it comprises the following stages:

manufacture of a lower shell of the door;

15 assembly of an upper unit of the door as previously described;

assembly of the said lower shell and of the said upper unit.

In this way, the different means comprising the 20 upper unit can be assembled and pre-set before being fixed to the shell of the door.

The assembly of the upper unit to the shell is a simple operation: the method of manufacturing a door according to the invention therefore allows a motor 25 vehicle constructor to apprehend save considerable time saving, the latter only having to make the shell and carry out the assembly with the pre-set unit, ready for use.

Preferably, the said manufacturing stage of the 30 said upper unit comprises a shaping stage of at least

one of the said struts so as to fit to it means of guiding, implementation and/or maintenance of the said struts in the said shell.

According to an advantageous solution, the said manufacturing stage of the said upper unit comprises an assembly stage, to the said strut(s), of a watertight joint seal against which the side of the said movable glass panel, turned towards the inside of the vehicle leans, comes to have contact with the watertight seal in the said sealing position, and an assembly stage of means for slightly distancing the said movable glass panel from the said watertight joint seal one from the other, in a sliding position in which the said movable panel can slide without damaging the said watertight joint seal, and for returning the said movable glass panel and the said watertight joint seal to lean against have contact with each other, in the said sealing position.

BRIEF DESCRIPTION OF THE DRAWINGS

Other characteristics and advantages of the invention will become clearer upon reading the following description of a preferred embodiment of the invention, given by way of non-restrictive examples and made in reference to the annexed figures in which:

figure 1 is an exploded view of a door according to the invention;

figure 2 is a detailed view of the means of guiding a sealing device according to the invention;

figure 2a is a skeletal representation of the means of guiding a sealing device in a sealing position according to the invention;

5 figure 2b is a detailed view of the means of guiding a sealing device in a sliding position according to the invention that are moved in a sliding position;

10 figure 2c is a skeletal representation of the means of guiding a sealing device according to the invention that are moved into a sliding position;

figure 3 is a view of an upper unit intended to be fitted to the shell of the door;

15 figure 3a is a view of an upper unit intended to be fitted to the shell of the door with the movable glass panel in the sliding position;

figure 4 is a view of an upper unit of the door according to the invention, fitted with a blind;

20 figures 5 and 6 are detailed views of the assembly of a blind on an upper unit of the door according to the invention;

figure 7 is another view of the upper unit illustrated in figure 4, the blind being in the closed position;

25 ~~figure 8 to 10 are~~ is a respective cross-section view of the cross member illustrated in figure 4;

figure 9a is a view of the panel in the sealing position;

30 figure 9b is a view of the panel in the open position;

figure 10 is a cross-section view of the central strut and the front strut of the upper unit illustrated in figure 4;

5 figures 11 and 12 are views of the means of locking/unlocking the movable panel of a door according to the invention;

figures 13a and 13b are views of two movable panels, respectively in the rectangular and trapezoidal shape, allowing to illustrate the 10 position of the means of locking/unlocking;

figure 14 is a front elevation of a rear hatch according to the principle of the invention, pre-equipped with a windscreen wiper device;

15 figures 15 and 16 are views of a preferred embodiment of an upper unit intended to be added to a shell of the door, this unit being respectively in a disassembled state and in an assembled state.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In reference to figure 1, a side door 200 20 comprises, according to this embodiment of the invention:

a movable panel 1 movable according to an essentially vertical direction along the central rail 22, driven between a sealing position 202 (figure 3) 25 and an open position 204 (figure 3a) via means of motorized driving (of type push-pull cable for example) comprising a gear motor 21;

means of guiding (explained in greater detail later on) planned provided in struts 34, 35 of a

frame 3 and intended to cooperate with the sliding feet 11 supported by the movable panel 1.

According to the object of the invention, the frame 3 is added and fixed to a body shell 6 (figure 5 3) of a the side door 200 of a vehicle, as illustrated in figure 3.

According to this embodiment, the frame 3 is planned provided to support a fixed rear quarter light window 4, independent of the sealing device 10 according to the invention. This The fixed rear quarter light window 4 and, consequently, the corresponding part of the corresponding frame 3 are entirely optional.

Advantageously, the rear quarter light window 4 15 shares one of the struts 34 of the frame 3 with the movable panel 1, and is mounted so as to present a flush aspect, the same as that of the movable panel 1.

According to a characteristic of the invention, 20 a watertight joint seal 5 is added to the frame 3 so as to extend along the entire length of the visible part of the frame 3 once it has been assembled with the body shell 6 of the door 200.

In the sealing position 202 (corresponding with figures 2, 2a), the movable panel 1 leans comes to be supported against this watertight joint seal 5 slightly flattening it so as to provide an airtight seal on the device notably in relation to humidity and drafts, as illustrated in figure 9a.

As illustrated by figure 2, the feet 11 supported by the movable panel 1 are intended to slide on the rails 31 fitted to the struts 34, 35 of the frame 3.

5 According to the invention, the door 200 comprises means of slightly distancing the movable glass panel 1 and the watertight joint seal 5 one from the other, in a sliding position 204, that is illustrated on figures 2b and 2c, 3a and 9b, into
10 which the movable panel 1 can slide without damaging the watertight joint seal 5, and of returning the movable glass panel 1 and the watertight joint seal 5 to be supported against each other, in a sealing position 202 that is illustrated on figures 2 and 2a,
15 3 and 9a.

According to this embodiment, these means are comprised of locking/unlocking displacement guide tracks 32 and 33, and intended to cooperate with the feet 11.

20 The movable panel 1 bears, next to each of its vertical edges, two feet 11, one next to the upper edge, and the other next to the lower edge. At the same time, two pairs of tracks 32 and 33 (respectively acting on the lowering and raising) are
25 planned provided for each strut 34, 35 of the frame 3, one pair next to the upper end of the corresponding strut 34, 35, and the other next to its lower end.

Thus, whilst lowering (starting from a sealing
30 position 202 (figure 3) that is illustrated on

figures 2 and 2a) the movable panel 1, the lower edge of the feet 11 slide along the upper edge of the guide track 33, which ~~provoke~~ produces a difference in level produces a gap from the movable panel 1 in the 5 direction indicated by the arrow F2 in figure 2. This displacement is also skeletally illustrated in figure 2a.

The movable panel 1 can then be lowered to a position limited by a stopper.

10 Inversely, during a raising of the movable panel 1 from the sliding position 204 (figure 3a) illustrated on figures 2b and 2c (the upper edge of the latter approximately reached the upper edge of the frame 3), the upper edge of the feet 11 slide 15 along the lower edge of the guide tracks 32, which ~~provoke~~ produces a displacement of the movable panel 1 in the direction indicated by the arrow F1 back to the sealing position as shown on figures 2 and 2b.

20 The highest position of the movable panel 1 is moreover limited by a mechanical stopper.

25 The displacement in the direction indicated by the arrow F1 is planned so that the movable panel 1 leans comes to be supported against the watertight joint seal 5 to ensure a tight seal, as indicated in figure 9a, the direction indicated by the arrow F2 being planned so as to sufficiently distance the movable panel 1 from the joint watertight seal 5, until they are in a non-contact position, as indicated in figure 9b.

The presence of pairs of feet 11 such as previously indicated and corresponding means of guiding, at the top and bottom of the struts 34, 35 of the frame 3, ensure a locking/unlocking 5 displacement of the movable glass panel 1 according to which the latter permanently remains substantially parallel to itself.

Furthermore, according to this embodiment, the movable glass panel 1 is a tinted window allowing to 10 hide, in the sealing position 202, the frame 3 and the watertight joint seal 5.

According to an advantageous characteristic of the invention, the sealing device can be fitted to a unit 7 (figure 3) ready to be assembled to a body 15 shell 6 of the door 200 classically comprising an exterior panel, backing, different means of reinforcement and opening/closing systems.

Such a unit 7 comprises:

a frame 3 of which at least one of the struts 20 34, 35 comprises means of guiding such as previously described;

a movable panel 1 bearing feet 11 intended to cooperate with the means of guiding of the frame 3.

This unit could in addition be pre-equipped with 25 means of motorization.

These means of motorization can be of the aforementioned type (central rail 22 and motor 21).

According to another conceivable embodiment, the unit 7 can be equipped with means of motorization 30 also comprised of a gear motor 21 and a push-pull

cable driving system, the driving system being linked to the feet 11 supported by the movable panel 1. In this case, the driving means extend into the struts 34, 35 of the frame 3.

5 This second embodiment consequently allows the removal of the central rail 22, the assembly of the unit 7 to the body shell 6 thus being easier than in the case of the first embodiment.

According to yet another embodiment illustrated
10 in figures 4 and 5, the upper unit 7 (figure 3) is comprised of a frame 3, a movable glass panel 1, a watertight joint seal 5 and a lower part 71 which will be described in fuller detail later on in connection with figure 15.

15 According to this embodiment in figure 15, this lower part 71 of the unit 7 comprises two guide rails 711 mounted onto the ends of one cross member 37 via mounting brackets 7111.

As indicated in figures 15 and 16, the cross
20 member 37 has at each of its ends a coupling 371 creating a housing for a strut 35 of the frame 3. Figure 15 illustrates an upper unit 7 in an assembled state and in which the struts 35 of the frame are slotted into the couplings 371 of the cross member
25 37, the rails 711 being in addition fixed to the struts 35 via mounting brackets 7112.

Lower part 71 exercises a stiffening function on the upper unit 7. Indeed the cross member 37 links the struts 35 at their lower ends, this connection
30 being furthermore strengthened by the rails 711 fixed

(before assembling the lower part 71 of the frame 3) to the cross member 37 on one hand and to the struts 35 on the other hand, as illustrated in FIG. 15.

According to another characteristic, the cross
5 member 37 has means of motorization comprising:

a gear motor 21;

a coil 211 coupled to the gear motor 21;

multi-stranded cables 212 connecting the coil
211 to the feet 11;

10 protective sheaths (not represented) of the
cables 212;

means of placing the cables 212 under tension
213 (known to those skilled in the art).

The driving via the multi-stranded cables 212
15 can be adjusted in other conceivable embodiments,
notably by using rack type cables.

The method of manufacturing and assembling an upper unit 7 comprises, according to the layout which has just been described, the following stages:

20 making of a lower part 71, comprising two lateral guiderails 711 linked via a cross member 37 bearing couplings 371 at its far ends;

assembling of this lower part 71 with a frame 3, notably by slotting the struts 35 into the couplings
25 371 of the cross member 37 and via the fixing of the guide rails 711 with the struts 35.

As previously indicated, this lower part 71 can be pre-equipped with means of motorization and driving, such as those previously indicated in the
30 context of this embodiment. In this case, the

mounting of the upper unit 7 comprises an assembling stage of the movable glass panel 1 with the feet 11 of the drive system.

The unit 7 being pre-assembled, the manufacturing of the door 200 is quickly and simply obtained by inserting the unit 7 into the body shell 6, between the external panel and the backing of the latter, and by interlocking the two elements by any appropriate means.

More precisely, the essential stages of the method according to the invention are:

a first stage, according to which a body shell 6 of the door 200 is made, such a body shell 6 classically comprises an external panel, backing, different means of reinforcement, opening/closing systems;

a second stage, according to which an upper unit 7 of the door is made, such a upper unit 7 comprises a frame 3 of which at least one of the struts 34, 35 comprises means of guiding a movable panel 1, these struts 34, 35 being intended to enter the body shell 6 and to be fixed to it;

a third stage consisting of making the struts 34, 35 enter the upper unit 7 in the body shell 6 and of assembling by any appropriate means (screwing, welding, etc.) the struts to the interior of the body shell 6.

The order of the first two stages is given for information purposes only, these two stages being, in practice, carried out at the same time.

Furthermore, according to an advantageous characteristic, the door 200 that has just been described can be fitted with a blind 41 comprising a movable toile 411 between a folded position (figure 5 4) and a spread out position (figure 7).

Blind 41 is sized in such a way so as to conceal the entire opening of the door 200 including the fixed rear quarter light window 4 (it can however be planned that, according to another conceivable 10 embodiment, a specific blind be provided for the rear quarter light window 4).

As illustrated by figures 4 to 6, the winding tube 412 of the blind 41 is fitted to the upper part of the frame 3 (it is however conceivable, according 15 to another embodiment, that the winding tube 412 is fitted to another part of the frame 3, in particular its lower part or one of the struts 34, 35).

In reference to figures 5 and 6, the pull bar 413 bears the sliding feet 4131 and 4132, guided 20 along the central strut 34 and the front struts 35 of the frame 3.

This aspect is illustrated in greater detail in figures 9a, 9b and 10 which are respectively cross-section views of the central strut 34 and the front 25 strut 35 of the frame 3.

As previously indicated, these struts 34, 35 integrate a guiding rail 31 planned to cooperate with the feet 11 interlocked with the movable panel 1 with the aim of guiding the sliding of the latter.

Trimmings 342 (figures 9a, 9b) and 352 (figure 10) are added to the frame 3 with the aim of notably hiding the rails 341 (figures 9a, 9b) and 351 (figure 10) and of hindering any dirt from entering.

5 In addition, the strut 34 has another guide rail 341 intended to cooperate with the foot 4131 (figure 5) (of which one end enters the rail 341) supported by a pull bar 413.

In a similar manner, the strut 35 has a rail 351
10 intended to cooperate with the foot 4132 (of which one end enters the rail 341) supported by a pull bar 413.

In reference to figure 8 which is a cross-section view of the cross member 36 of the frame 3,
15 the winding tube 412 of the blind 41 is fitted next to the cross member 36.

Trimming 361, creating a box, is added to the cross member 36 so as to hide the winding tube 412 and to hinder any possible dirt from entering and
20 affecting its proper working.

This trimming 361 has a slot 3611 so that the toile 411 of the blind can pass through, this slot 3611 being sized to allow the pull bar 413 to enter the interior of the trimming 361 in the folded
25 position of the movable toile 411.

According to this embodiment, the struts 34 and 35 of the cross member 36 ~~bear in an embedment are attached to the joint watertight seal 5~~ intended to ensure the watertightness of the sealing device when
30 the movable panel 1 is in the sealing position 202.

Furthermore, the door 200 comprises, according to another advantageous aspect, burglarproof means acting upon the movable panel 1 when the latter is in the sealing position 202.

5 This aspect is illustrated by figures 11 and 12.

In reference to figure 11, these burglarproof means are comprised of a lock 12, made for example in metal covered in a TPE type material, fixed to the side of the movable panel 1 turned towards the inside 10 of the vehicle. Several locks can of course be planned for.

As illustrated in figure 12, this a lock is intended, in the sealing position 202 of the movable panel 1, to be embedded into the housing 362 of the 15 frame 3 defined by the part 362 protruding into the cross member 36.

Thus, once the movable panel 1 is in the sealing position 202, it is impossible for someone to pull on the movable panel 1 so as to displace it towards the exterior of the vehicle, nor to lean down on it to displace it towards the interior.

Advantageously, a screw 121 goes through the lock 12 and is intended to cooperate with the part 362 of the cross member with the aim of, during the 25 tightening or loosening of the screw 121, adjusting the sealing position 202 of the movable panel 1.

To be specific, this screw 121 acts so as to adjust the sealing position 202 of the mobile movable panel 1 in an upward direction. Another screw 30 operating with another part of the frame 3 can also

be planned so as to adjust the sealing position 202 of the movable panel 1 in a lateral direction.

The lock 12 that has just been described can be fitted to the upper edge 111 of the movable panel 1, 5 in particular if the latter has a rectangular shape (figure 13a), or to its upper edge 111 and/or its sloping edge 112, in the case of a movable panel of trapezoidal shape (figure 13b).

In the case of a trapezoidal shaped panel, 10 adjustment screws associated with a lock fitted next to the upper edge 111 of a part, and a lock fitted next to the sloping edge 112, allow the adjusting of the sealing position 202 of the movable panel as much in an upward direction as a lateral direction.

15 As previously indicated, the principle of the invention particularly applies to side doors, and also applies to back doors and rear hatches. Also, according to a variant, the doors (or rear hatches), according to the invention, can be fitted with a 20 linear windscreens wiper device.

Such an embodiment is illustrated in figure 14.

As shown in this figure, the struts 34, 35 of the door 200 integrate the means of guiding allowing linear displacement, according to a substantially 25 vertical direction (such as indicated by the double arrow F3), the blade 50 having the aim of evacuating the water present on the window 1 (according to another conceivable embodiment, the means of guiding can be planned to ensure a linear displacement 30 according to a substantially horizontal direction).

These means of guiding are composed of a rail in which the feet supported by the blades are likely to be displaced. This rail comprises:

5 two runners extending substantially along the entire height of the window 1, parallel to each other;

two offset tracks parallel between them and linking the two runners, whilst sloping in relation to the latter.

10 Such a guide rail enables an operating cycle according to which the windscreens wiper is slid across the surface of the window, and then distanced from it, slid in the opposite direction along the window (whilst being distanced from it), then brought 15 into contact with the window, before being slid once again across the latter.

Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that 20 changes may be made in form and detail without departing from the spirit and scope of the invention.